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09/800,421	03/06/2001	J. Kelly Kindig	50100-00230	2555
7590 02/01/2006 MARSH FISCHMANN & BREYFOGLE LLP 3151 S. Vaughn Suite 411 Aurora, CO 80014			EXAMINER NECKEL, ALEXA DOROSHENK	
			ART UNIT	PAPER NUMBER
			1764	

DATE MAILED: 02/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/800,421

Applicant(s)

KINDIG ET AL.

Examiner

Alexa D. Neckel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 12-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5/24/01; 5/24/02; 09/19/02; 12/9/02
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Species A, claims 1-11 in the reply filed on August 5, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Information Disclosure Statement***

2. The reference listed under "3" on the Information Disclosure Statement of May 24, 2001 as "Spacil" has been lined through because the document number does not matches neither the publication date nor inventor name listed.

3. The information disclosure statement filed January 22, 2002 fails to comply with 37 CFR 1.98(a)(1), which requires the following: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that provides a blank space next to each document to be considered, for the examiner's initials; and (5) a heading that clearly indicates that the list is an information disclosure statement. The information disclosure statement has been placed in the application file, but the information referred to therein has not been considered.

In this instance, a list of references is missing.

***Drawings***

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: In figures 1 and 2, "120" as stated on page 5, line 30. In figures 3 and 4, "320" as stated on page 8, line 16. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: In figure 8, "812". Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet"

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or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

6. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

**The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.**

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-3, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jäger et al. (4,337,067) in view of Rammler et al. (4,268,359).

With respect to claims 1, 3 and 7, Jäger et al. discloses a method comprising contacting a coal feedstock (1) with a treatment gas (15) that is substantially all H<sub>2</sub> (from separator 9 and scrubber 19) to convert matter to methane (col. 4, lines 35-41) and carbon (3) in a hydrogenating gasifier (2). Jäger et al. fails to disclose a temperature and residence time for the hydrogenating gasifier.

Rammler et al. teaches a method for feeding hydrogen and coal into a hydrogenation gasifier wherein a reaction temperature of 700° to 1100°C are preferred to generate methane (col. 4, line 67- col. 5, line 15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to operate the hydrogenation gasifier of Jäger et al. within the range taught by Rammler et al. in order to achieve the Jäger et al.'s desired product, methane.

Jäger et al., as modified, discloses all of the claims limitations as set forth above, but the reference does not explicitly disclose the amount of time in which the coal and H<sub>2</sub> are reacted. The specific amount of reaction time is not considered to confer patentability to the claims. As the reactor efficiency and amount of desired product produced are variable(s) that can be modified, among others, by adjusting said amount of reaction time, with said amount of desired product increasing as the time is increased, the precise reaction time would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed amount of time cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the amount of reaction time in the modified apparatus of Jäger et al. in order to obtain the desired amount of methane product and operational efficiency (In re Boesch, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (In re Aller, 105 USPQ 223).

With respect to claim 2, Jäger et al. fails to disclose the sulfur content of the coal used. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the least expensive, and therefor lowest-grade coals and highest sulfur content coals, in the known method in order to minimize the costs of operating they system and in doing such, one would have a reasonable expectation of success.

The rationale to modify or combine the prior art does not have to be expressly stated in the prior art; the rationale may be reasoned from knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). See also *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) (setting forth test for implicit teachings); *In re Eli Lilly & Co.*, 902 F.2d 943, 14 USPQ2d 1741 (Fed. Cir. 1990) (discussion of reliance on legal precedent); *In re Nilssen*, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988) (references do not have to explicitly suggest combining teachings); *Ex parte Clapp*, 227 USPQ 972 (Bd. Pat. App. & Inter. 1985) (examiner must present convincing line of reasoning supporting rejection); and *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993) (reliance on logic and sound scientific reasoning).

With respect to claim 6, Jäger et al. further discloses wherein the treatment gas (14) is formed by partial oxidation in steam gasifier (4) of carbon (3).

10. Claims 1-5, 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benson (3,615,298).

With respect to claims 1, 3 and 7, Benson discloses a method comprising contacting a coal feedstock (14) with a treatment gas (comprising hydrogen generated in vessel (10) that is substantially made up of H<sub>2</sub> (amount controlled by the user col. 23, lines 27-31) to convert matter to methane (20) and carbon/char (22) at a reaction temperature of 1,000° to 2,000°C (about 538° to 1093°C) (col. 1, lines 69-75).



Benson discloses all of the claims limitations as set forth above, but the reference does not explicitly disclose the amount of time in which the coal and H<sub>2</sub> are reacted as well as the specific amount of hydrogen. The specific amount of reaction time and weight percent of hydrogen is not considered to confer patentability to the claims. As the reactor efficiency, amount of hydrogen used and amount of desired product produced are variable(s) that can be modified, among others, by adjusting said amount of reaction time, with said amount of desired product increasing as the time is increased, the precise reaction time and weight percent of hydrogen generated would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed amount of time and weight percent of hydrogen cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the amount of reaction time and weight percent of hydrogen in the apparatus of Benson in order to obtain the desired amount of methane product and operational efficiency (In re Boesch, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (In re Aller, 105 USPQ 223).

With respect to claim 2, Benson fails to disclose the sulfur content of the coal used. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the least expensive, and therefor lowest-grade coals and highest sulfur content coals, in the known method in order to minimize the costs of

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operating the system and in doing such, one would have a reasonable expectation of success.

The rationale to modify or combine the prior art does not have to be expressly stated in the prior art; the rationale may be reasoned from knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). See also *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) (setting forth test for implicit teachings); *In re Eli Lilly & Co.*, 902 F.2d 943, 14 USPQ2d 1741 (Fed. Cir. 1990) (discussion of reliance on legal precedent); *In re Nilssen*, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988) (references do not have to explicitly suggest combining teachings); *Ex parte Clapp*, 227 USPQ 972 (Bd. Pat. App. & Inter. 1985) (examiner must present convincing line of reasoning supporting rejection); and *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993) (reliance on logic and sound scientific reasoning).

With respect to claim 4, Benson further discloses wherein the hydrogen/treatment gas is formed by steam oxidation of iron (col. 2, lines 58-64).

With respect to claim 5, Benson further discloses wherein the hydrogen/treatment gas comprised carbon monoxide along with hydrogen (col. 2, lines 60-64).

With respect to claim 11, at least a portion of the treatment gases generated in the iron oxidation vessel (10) combine with the methane also generated in the iron oxidation vessel (col. 2, lines 70-73).

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11. Claims 1-3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rammler et al. (4,268,359).

With respect to claims 1, 3 and 7, Rammler et al. discloses a method comprising contacting a coal feedstock (3) with a treatment gas (7 and 13) that is substantially all H<sub>2</sub> to convert matter to methane and carbon (12) at a reaction temperature of 700° to 1100°C to generate methane (col. 4, line 67- col. 5, line 15).

Rammler et al. discloses all of the claims limitations as set forth above, but the reference does not explicitly disclose the amount of time in which the coal and H<sub>2</sub> are reacted. The specific amount of reaction time is not considered to confer patentability to the claims. As the reactor efficiency and amount of desired product produced are variable(s) that can be modified, among others, by adjusting said amount of reaction time, with said amount of desired product increasing as the time is increased, the precise reaction time would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed amount of time cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the amount of reaction time in the apparatus of Rammler et al. in order to obtain the desired amount of methane product and operational efficiency (In re Boesch, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (In re Aller, 105 USPQ 223).

With respect to claim 2, Rammler et al. fails to disclose the sulfur content of the coal used. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the least expensive, and therefor lowest-grade coals and highest sulfur content coals, in the known method in order to minimize the costs of operating they system and in doing such, one would have a reasonable expectation of success.

The rationale to modify or combine the prior art does not have to be expressly stated in the prior art; the rationale may be reasoned from knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). See also *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) (setting forth test for implicit teachings); *In re Eli Lilly & Co.*, 902 F.2d 943, 14 USPQ2d 1741 (Fed. Cir. 1990) (discussion of reliance on legal precedent); *In re Nilssen*, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988) (references do not have to explicitly suggest combining teachings); *Ex parte Clapp*, 227 USPQ 972 (Bd. Pat. App. & Inter. 1985) (examiner must present convincing line of reasoning supporting rejection); and *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993) (reliance on logic and sound scientific reasoning).

12. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jäger et al. (4,337,067) in view of Rammler et al. (4,268,359) as applied to claim 1 above, and further in view of Markbreiter et al. (4,942,734).

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Jäger et al., as modified, discloses all of the limitations as discussed with regard to claim 1, above, but fails to disclose any further use for the generated methane.

Markbreiter et al. teaches wherein methane can be used in the combustion portion of a combined cycle generator in order to achieve efficient generation of electricity, as well as liquid CO<sub>2</sub>, (col. 1, lines 52-57). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the methane generated by Jäger et al. in the generation of electricity of Markbreiter et al. in order to make efficient use of the generated product.

13. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rammler et al. (4,268,359) as applied to claim 1 above, and further in view of Markbreiter et al. (4,942,734).

Rammler et al., as modified, discloses all of the limitations as discussed with regard to claim 1, above, but fails to disclose any further use for the generated methane.

Markbreiter et al. teaches wherein methane can be used in the combustion portion of a combined cycle generator in order to achieve efficient generation of electricity, as well as liquid CO<sub>2</sub>, (col. 1, lines 52-57). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the methane generated by Rammler et al. in the generation of electricity of Markbreiter et al. in order to make efficient use of the generated product.

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14. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Benson (3,615,298) in view of Tatem et al. (4,172,431).

Benson, as modified, discloses all of the limitations as discussed with regard to claim 1, above, but fails to disclose any further use for the generated methane and char.

Tatem et al. teaches wherein methane and char can be used to fire a boiler (col. 2, line 45-46) which then is used to generate electricity (col. 1, lines 44-48). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the products of the system of Benson in the boiler of Tatem et al. in order to make use of the products as well as to generate electricity.

### ***Conclusion***

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa D. Neckel whose telephone number is 571-272-1446. The examiner can normally be reached on Monday - Thursday from 9:00 AM - 7:30 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alexa D. Neckel  
Primary Examiner  
Art Unit 1764

January 30, 2006

  
ALEXA DOROSHENK NECKEL  
PRIMARY EXAMINER